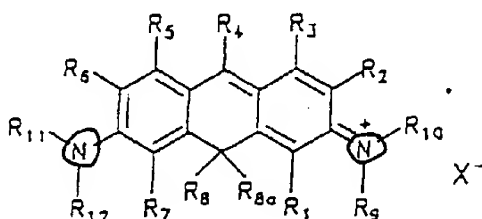


IN THE CLAIMS:

Cancel claims 1 through 19 without prejudice to the reentry of the same subject matter at any later time;

Add the following claims:

20. (New) Use of compounds of the general formula I



* see substitutions for N
at end of claim

as labeling groups in a procedure for detecting analytes:

wherein:

R₁, R₂, R₃, R₄, R₅, R₆ and R₇ are in each case independently at least one of hydrogen, halogen, a hydroxyl, amino, sulfo, carboxyl or aldehyde group, a saturated or unsaturated straight chain, branched or cyclic hydrocarbon group having up to 20 carbon atoms, wherein the hydrocarbon groups include at least one of alkyl, alkenyl, alkynyl, cycloalkyl, aryl, in particular phenyl, and heteroaryl radicals, optionally heteroatoms selected from oxygen, sulfur or nitrogen atoms, and two or more substituents;

or one or more of the radicals R₁-R₇, in each case with adjacent substituents, form a ring system containing one or more multiple bonds;

R₈ and R_{8a} are in each case independently at least one of a saturated or unsaturated, straight-chain, branched or cyclic hydrocarbon group having up to 20 carbon atoms, optionally selected from a C₁-C₆-alkyl group selected from at least one of methyl, ethyl, propyl and butyl, or an aryl- or heteroaryl group, in particular phenyl, which optionally contains at least

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one of heteratoms selected from oxygen, sulfur or nitrogen atoms and one or more substituents;

BS

or R_8 and R_{8a} can form a ring system:

R_9 , R_{10} , R_{11} and R_{12} are in each case independently at least one of hydrogen, a saturated or unsaturated, straight-chain, branched or cyclic hydrocarbon group having up to 20 carbon atoms, optionally selected from polyether, phenyl or phenylalkyl having 1-3 carbon atoms in the chain, wherein the hydrocarbon groups optionally contain at least one of heteroatoms selected from oxygen, sulfur or nitrogen atoms, and one or more substituents;

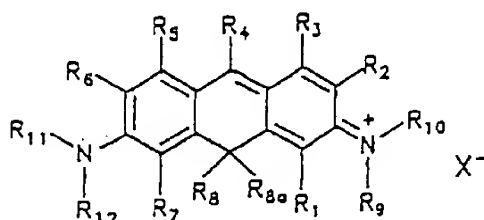
or one or more of the radicals R_9 - R_{12} , in each case with adjacent substituents, form a ring system which can contain one or more multiple bonds; and

* { wherein at least one of $-N(R_{11})(R_{12})$ and $=N(R_9)(R_{10})$ can be replaced by at least one of $-OR^9$ and $=O$, optionally by both;
and X represents optionally a species of anions present for charge equalization.

21. The use of compounds according to claim 20, wherein the substituents of the hydrocarbon groups of R_1 - R_7 are selected from at least one of halogens, hydroxyl, amino, sulfo, phospho, carboxyl, aldehyde, C_1 - C_4 -alkoxy, C_1 - C_4 -alkoxycarbonyl groups.
22. The use of compounds according to claim 20, wherein the substituents of the hydrocarbon groups of R_8 - R_{8a} are selected from at least one of halogens, hydroxyl, amino, sulfo, phospho, carboxyl, aldehyde, C_1 - C_4 -alkoxy and C_1 - C_4 -alkoxycarbonyl groups.
23. The use of compounds according to claim 20, wherein the substituents of the hydrocarbon groups of R_9 , R_{10} , R_{11} and R_{12} are selected from at least one of halogens, hydroxyl, amino, sulfo, phospho, carboxyl, carbonyl, alkoxy and alkoxycarbonyl groups.

24. The use of compounds as claimed in claim 20, wherein the compound I is covalently coupled to a receptor specific for an analyte to be detected.
25. The use of compounds as claimed in claim 20, wherein the detection procedure is selected from nucleic acid hybridization procedures and immunochemical procedures.

26. (New) A compound of the general formula I according to claim 20,

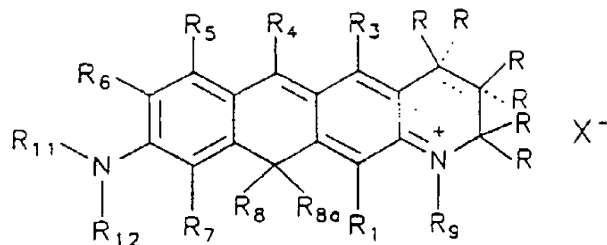


wherein R_1 - R_{12} and X are defined as in claim 20, with the proviso that if R_1 - R_3 and R_5 - R_7 are hydrogen and R_8 , R_{8a} and R_9 - R_{12} are methyl, then R_4 is not one of hydrogen, hydroxyl, methyl, isopropyl, t-butyl, phenyl, o-tolyl, p-tolyl, 2,6-dimethylphenyl, 2-t-butylphenyl, 2-isopropenylphenyl and 4-diaminomethylphenyl.

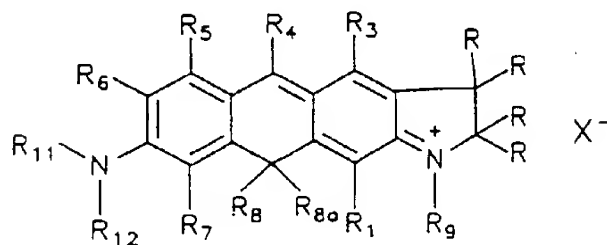
27. The compound according to claim 26, wherein at least one of R_6 is bridged with R_{11} , and R_7 with R_{12} ; at least one of R_1 is bridged with R_{10} and R_2 with R_9 and form a ring system.
28. The compound according to claim 27, wherein the ring system contains 5-or 6-membered rings which contain one or more multiple bonds.
29. The compound according to claim 26, wherein R_4 is hydrogen, C_1 - C_6 -alkyl or a radical containing an aromatic ring system.

30. The compound according to claim 26, wherein R_8 and R_{8a} are in each case independently at least one of methyl, ethyl and phenyl.

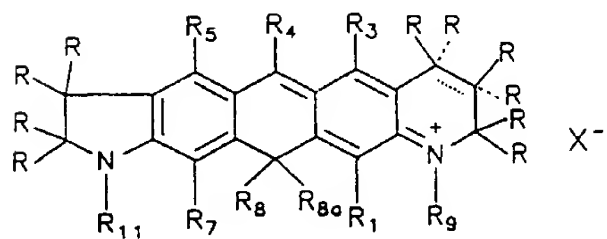
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31. (New) The compound according to claim 27, which corresponds to one of the general formulae IVa to IVe as follows:



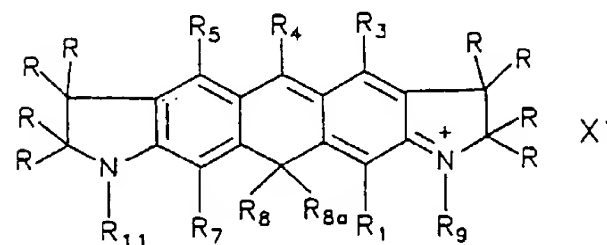
IVa



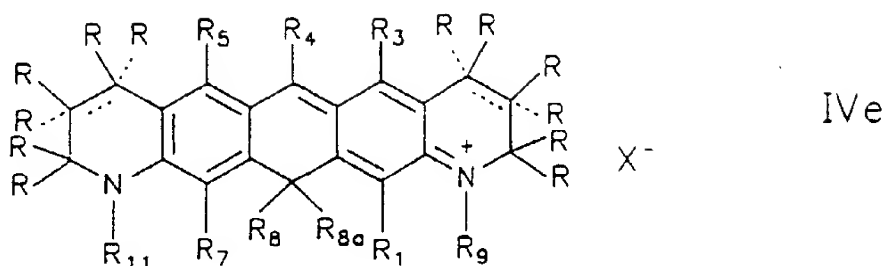
IVb



IVc



IVd

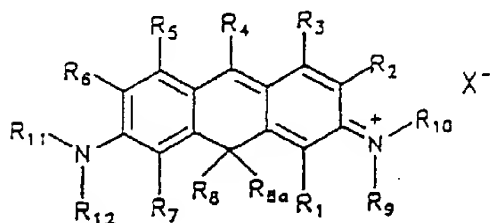


in which the broken lines are optionally double bonds, and in the presence of the double bonds the radicals R bonded via a broken line are absent; R_1 , R_3 , R_4 , R_5 , R_6 , R_7 , R_{8a} , R_9 , R_{11} , R_{12} and X are defined as in claim 20, and R in each occurrence, can be identical or different and is defined as R_1 - R_7 in claim 20.

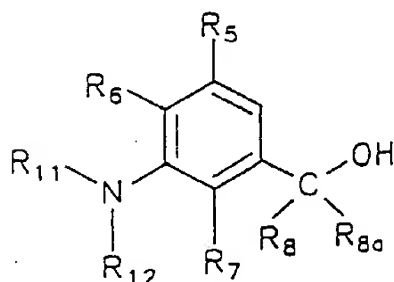
32. The compound according to claim 26 further comprising a group capable of covalent coupling.
33. The compound according to claim 32, wherein the coupling group is at least one of -COOH, -NH₂, -OH and -SH.
34. The compound according to claim 32 being coupled to at least one of a carrier and a biomolecule via coupling groups.
35. The compound according to claim 34, wherein the carrier is selected from at least one of porous glass, ion exchange resins, dextrans, cellulose, cellulose derivatives and hydrophilic polymers.
36. The compound according to claim 34, wherein the biomolecule is selected from at least one of peptides, polypeptides, nucleotides, nucleosides, nucleic acids, nucleic acid analogs and haptens.

37. A labeling agent for the detection of an analyte, which comprises the compounds according to claim 26.

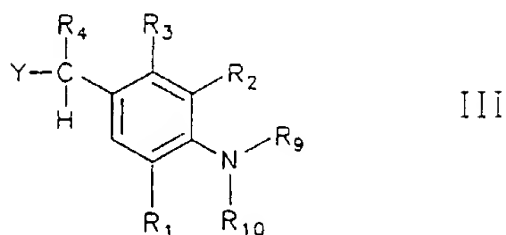
38. (New) A process for the preparation of compounds of the general formula I



wherein R_1 - R_{12} and X are defined as in claim 20,
comprising the steps of
reacting one of a compound of the general formula II



in which R_5 , R_6 , R_7 , R_8 , R_{8a} , R_{11} , R_{12} are defined as in claim 20,
or the dehydration product of II, with a compound of the general formula
III

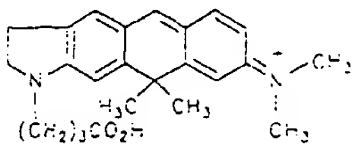
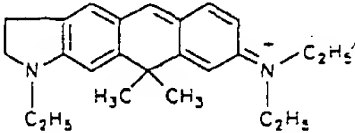
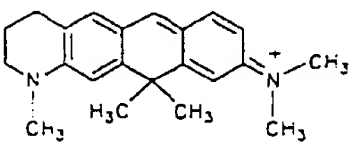
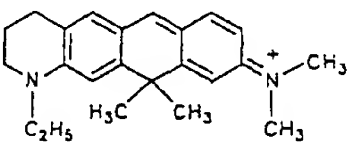
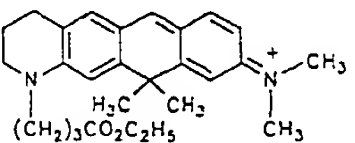
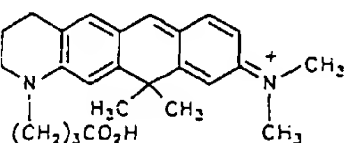
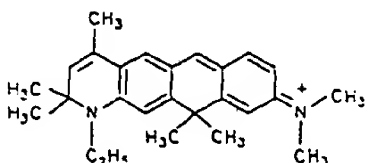


in which R_1 - R_4 , R_9 and R_{10} are defined as in claim 20 and Y is one of a halogen, in particular bromine, a hydroxyl or thio group,
in a suitable solvent, under acidic conditions and in the presence of a catalyst; and
reacting the compound formed by ring closure between one of the compound II or its dehydration product, and the compound III by oxidation into the compound I.

39. The process according to claim 38, wherein the solvent is a nonpolar solvent, selected from one of methylene chloride, 1,2-dichloroethane or chloroform.
40. The process according to claim 38, wherein the catalyst is boron trichloride.
41. The process according to claim 38, wherein the acid is selected from one of sulphuric acid, phosphoric acid or polyphosphoric acid.
42. The process according to claim 38, wherein the oxidant is tetrabutylammonium(meta)periodate.
43. The process according to claim 38, wherein the compound (I) is obtained without isolation of intermediates.

	Structure	λ_A / nm	λ_F / nm	Q_F / %
1 Cp 149		606	627	71
2 AZ 6		608	630	65
3 JA 261		608	630	70
4 JA 262		608	630	70
5 AZ 1		617	641	77
6 AZ 4		617	641	78

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7 AZ 14		617	641	78
8 AZ 7		618	642	75
9 JA 260		616	640	75
10 JA 264		616	640	75
11 JA 263		616	640	76
12 JA 266		616	640	76
13 JA 265		634	658	62

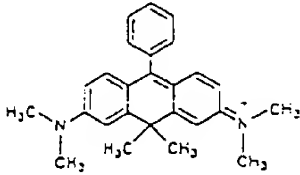
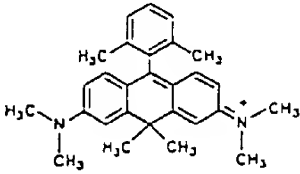
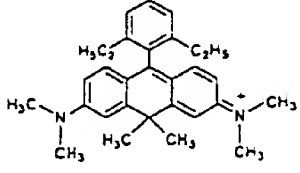
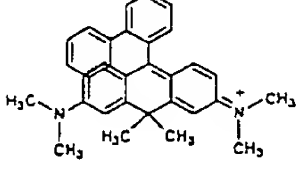
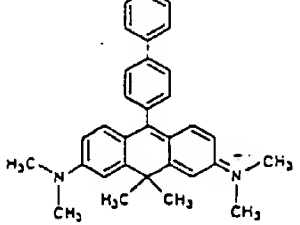
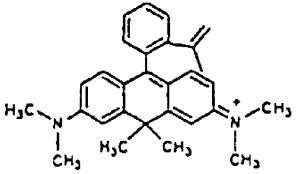
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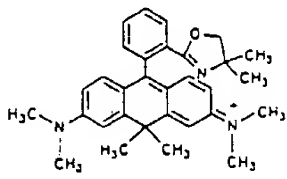
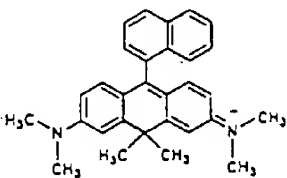
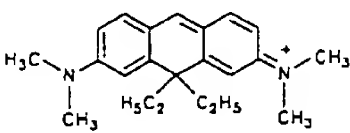
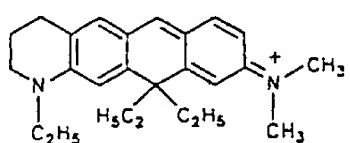
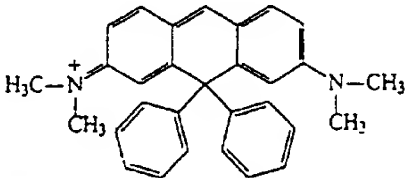
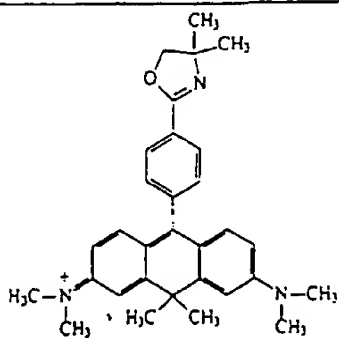
14 AZ 8		641	666	60
15 JA 267		633	660	60
16 JA 268		634	660	58
17 AZ 2		633	657	63
18 AZ 5		633	657	61
19 AZ 3		629	650	69
20 AZ 13		626	648	87

21 AZ 9		647	675	55
22 AZ 12		647	664	58
23 AZ 11		664	688	49
24 JF 19		602	643	58
25 JF 20		604	675	41
26 JF 18		601	636	67

TABLE 10

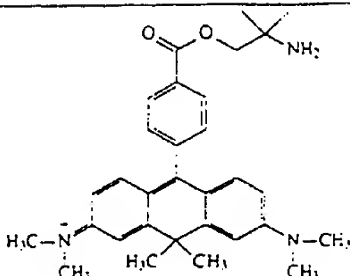
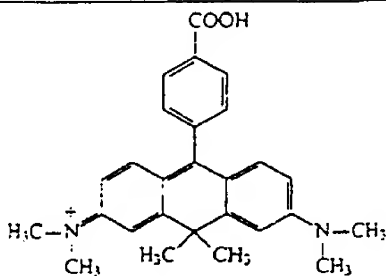
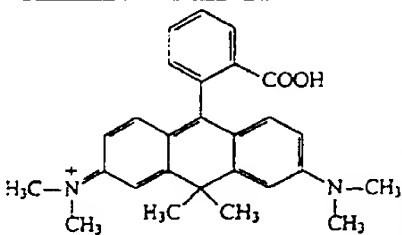
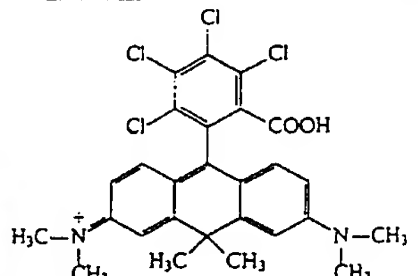
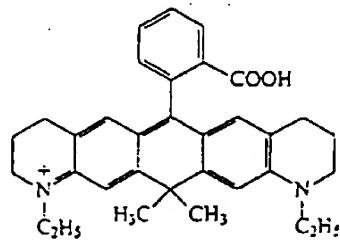
27 JF 16		611	638	6
28 JF 21		610	637	46
29 JF 22		612	641	41
30 JF 24		617	643	71
31 JF 25		613	638	6
32 JF 26		611	640	59

✓

33 JF 17		610	640	70
34 JF 23		618	643	60
35 AZ 16		606	628	70
36 AZ 17		615	640	75
37 AZ 18		627	655	62
38 JF30		621	652	4

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39 JF 31		618	648	5
40 JF 32		618	647	5
41 JF 34		612	642	75
42 JF 35		642	672	64
43 JF 36		632	662	85

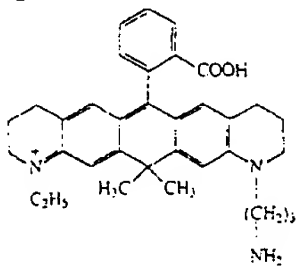
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44 JF 37		662	692	60
45 JF 38		653	683	70
46 JF 39		683	713	45
47 JF 40		670	700	55
48 JF 41		700	730	40
49 JF 42		557	577	95

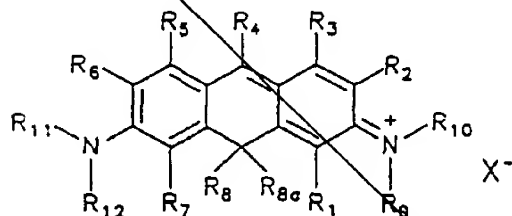
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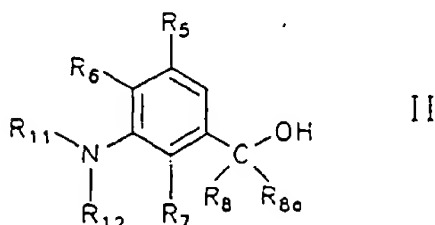
50		632	660	80
JF 43				

A further object of the present invention consisted in making available a preparation process for carbopyronine compounds which can be carried out in a simple, environmentally compatible and inexpensive manner and which at least partially avoids the disadvantages of the known processes for the preparation of carbopyronines.

This object was achieved according to the invention by a process for the preparation of compounds of the general formula (I)



where R₁-R₁₂ and X have the meanings indicated in claim 1, characterized in that a compound of the general formula (II)



in which R₅, R₆, R₇, R₈, R_{8a}, R₁₁ and R₁₂ are as defined

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** CONTINUING DATA *****

This application is a 371 of PCT/EP00/03568 04/19/2000

** FOREIGN APPLICATIONS *****

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** 04/22/2002

Foreign Priority claimed <input type="checkbox"/> yes <input type="checkbox"/> no	STATE OR COUNTRY GERMANY	SHEETS DRAWING 3	TOTAL CLAIMS 19	INDEPENDENT CLAIMS 1
35 USC 119 (a-d) conditions met <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance				
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